in a region of a top edge of the container at level or roughly level with the sealing region.

IN THE DRAWINGS

Enclosed herewith is corrected Fig. 2 amended in red for the Examiner's approval.

REMARKS

Applicant has carefully reviewed the Examiner's September 25, 2002, Official Action and respectfully requests reconsideration based on the above amendments and the following comments.

Claim 1 has been cancelled and new claims 22-26 added. Claims 2-26 remain in the application for consideration.

In response to the Examiner's objection to the drawings, specification and claims, Applicant has amended Fig. 2 to better identify the sealing region 20' of web 20 being below the seal 11 and the specification at line 15, page 15 and lines 20-21, page 16 with corresponding amendments, amended the specification to make the identification of sealing web 20 consistent throughout the specification and corrected the misspellings in claims 14 and 15. Applicant respectfully submits that these objections have now been overcome.

In response to the Examiner's rejection of the claims under the doctrine of double patenting as being unpatentable over claims in co-pending Applicant No. 09/822,874, Applicant has enclosed a terminal disclaimer to any patent period beyond the expiration date of any patent granted on Applicant No. 09/822,874. Applicant respectfully submits that these rejections have now been overcome.

In response to the Examiner's rejection of claims 7, 8 and 16 under 35 U.S.C. § 112, second paragraph, Applicant has cancelled claim 16 and amended claims 7 and 8 to eliminate the problems identified by the Examiner, Applicant respectfully submits that this rejection has now been overcome.

The Examiner has further rejected claims 1-10, 13 and 18 under 35 U.S.C. § 102(b) as being anticipated by Bakker '688, claims 1, 2, 6, 7, 11, 15, 19 and 21 under 35 U.S.C. § 102(b) as being anticipated by Lindgraf '127, claims 1, 6, 7, 8 and 15 under 35 U.S.C. § 102(b) as being anticipated by Philips '349, claims 17 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Landgraf in view of Fehres '962, claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Philips in view of Xates '219 and Morris '942, claims 14, 16 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Philips in view of Krautkramer '226 and claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Philips in view of Ullman '023. Applicant respectfully

traverses all of these rejections especially as applied to new independent claims 22-26.

New Claim 22

With regard to new independent claim 22, the Applicant notes that it is a combination of the features of original claims 1 and 14-16, wherein the first alternative is restricted in that the sealing region is arranged at level with the outer snap edge (corresponding to the snap element according to line 3 of original claim 1). According to the second alternative, the sealing region is arranged at level or roughly level with the outer reinforcing rib being outwardly protruding (see page 10, line 20 of the specification).

The Cited Prior Art

Bakker (FR 2 665 688) discloses a plastic container with a snap lid having a snap edge arranged at the bent-around edge of the container, i.e. spaced apart from the sealing web. No reinforcing rib is provided.

Landgraf (EP 0 600 127) discloses a plastic container with a snap lid, wherein the lower portion of web 12 being provided with an inwardly protruding lip provides a sealing region. The sealing region is an the vertical direction spaced apart from the snap edge of the container.

Philips (US '349) discloses a container with a snap lid having at least one projection radially inside the sealing web 18b. However, the area of the projection adjacent to the

sealing web is larger than the total vertical extension of the projection, in contrast to the claimed feature. Furthermore, the sealing region is vertically below the outer snap edge and not at level with it.

Fehres (US '962) discloses a container having a lid retained by a locking ring. Furthermore, the area of projection 9 being adjacent to the sealing web 6 is equal to the total vertical extension of the projection, but not smaller than it, as claimed.

With regard to all the independent claims 22-26, Applicant respectfully submits that Morris (US '942) and Krautkramer (US '226) disclose containers with lids that are "threadably engagable with the container member" (see outwardly and inwardly directed threads 20, 22, column 3 and claim 1 of US '942; claim 1 of US '226).

The Claimed Invention As Compared To The Cited Prior Art

It is an object of the present invention, to design a plastic container with snap lid, which fulfills the special demands imposed on leak-proofness, while simultaneously providing high load-bearing capacity.

The object is solved by providing a sealing region of a sealing web contacting the inside of the container and arranged at level with the outer snap edge of the container or being arranged at level or roughly level with a reinforcing rib being integrally molded on the container.

The inventor has discovered that the leak-proofness can be enhanced by the features mentioned above, since the sealing region is arranged at a level of a rather stiff portion of the container and the sealing web hereby can be forced to the inner side of the container in a way so that the upper edge region of the container is symmetrically or at least substantially symmetrically compressed by the snap edge arranged at the outer side and by the sealing web arranged at the inner side of the container. Due to this symmetrical arrangement of the sealing region and the snap edge or a reinforcing rib with respect to the vertical direction, the leak-proofness of the container can be improved.

In this context it is of importance to provide a projection radially inside the sealing web, wherein a vertical extension of an area of the projection adjacent the sealing web is smaller than a total vertical extension of the projection. This ensures that the projection improves stiffness of the lid, while due to the small extension of the projection adjacent to the sealing web deteriorations of the shape of the sealing web, lowering the leak-proofness of the sealing region due to shrinkage, sink marks of the projection at the sealing web or the like, are lowered or avoided. This is not taught or shown by Philips.

No hint can be obtained from Landgraf or Philips to arrange the sealing region at level of the outer snap edge or

to change the arrangement of the outer snap edge in order to improve the leak-proofness of the container.

Furthermore, Applicant submits that someone skilled in the art would not apply the teaching of Krautkramer (US '226) to the container of Philips with respect to the reinforcement ribs. Krautkramer discloses a plastic screw closure for bottles but not a reinforcing rib being provided additionally to a snap edge. Furthermore, someone skilled in the art would not combine the teachings of containers being closed by snap lids on one hand and screw lids on the other hand since snap lids should have a given stiffness in order to ensure safe closure as well as a given elasticity to be snapped unto the container, quite different to the requirements of a screw lid.

Accordingly, Applicant respectfully submits that new claim 22 and the claims dependent therefrom are patentable over the cited prior art.

New Claim 23

Claim 23 is a combination of the features of original claims 1, 3, 4 and 14-16. Although the feature of claim 3 is disclosed by Bakker, a significant improvement of leak-proofness is achieved if on one hand the snap edge or the reinforcing edge is level or roughly level with the sealing region and on the other hand if the projection is located at a circumferential edge, so that edges having very specific

functions are located radially inwardly and outwardly of the sealing region.

New Claim 24

This claim is a combination of the features of original claims 1, 3, 21 7, p. 14, 1. 22ff and fig. 2, 4 showing the snap edge being spaced from an upper end and lower edge of the collar, furthermore being supported by the fact that a reinforcing rib 16 may be provided vertically above the snap edge.

New claim 24 is novel over Bakker for the reasons mentioned above. Claim 24 is novel over Landgraf, disclosing a plastic container with an outer snap edge, since Landgraf does not disclose a container having a projection being spaced radially apart from the sealing web, since laterally extending tabs 17, being provided with distance holder 18, are molded to the inner sealing web 12.

Comparison of the Claimed Invention With the Cited Prior Art

The inventor has discovered that providing a projection being spaced radially apart from the sealing web and located at an inside circumferential edge increases leak-proofness considerably in case the sealing region is at level or roughly at level with the outer snap edge or a radially projecting reinforcing rib.

By the combination of features, a sealing web is forced against the inside of the container by a snap edge or

reinforcing rib arranged (roughly) at the level of an edge/rib at the outside of the container, while the region of the lid radial inwardly to the sealing web is not influenced by the protrusion which is increasing the stiffness of the lid or which may affect the sealing properties of the web due to shrinkage tension, sink marks or the like. Accordingly leak-proofness of the sealing region is considerably increased since very specific edges being in fact linear structures are arranged "symmetrically" (i.e. inwardly and outwardly) to the sealing region applying forces to the sealing region by the snap on forces of the lid and absorbing external forces effectively since they are dissipated at both sides of the sealing region.

However, someone skilled in the art would not combine the teachings of Bakker and Landgraf since Landgraf teaches to provide a crossing tab 17, i.e. a tab crossing ring groove 16 and being molded to inner web 12 and the inner wall portion 16 of the lid. Furthermore, spacing apart the projection from the sealing web may cause deformations of the sloping upwardly portion of upper wall 13, being arranged vertically above tab 17, especially in case containers are stacked onto each other.

Furthermore, someone skilled in the art would not be taught by Landgraf and Bakker to provide a collar, a molded snap edge spaced from an upper end and a lower end of the collar, or the snap edge being arranged at level of the

projection. Landgraf shows the snap edge moulded at the upper end of the collar leading to a curved and wide rib having a snap edge at its free end, lowering the forces to snap-off and lowering the forces which can be absorbed without leakage. Bakker does not disclose a collar, as claimed and arrangement of the snap edge at level or protrusion 38 would lead to an enlargement of the diameter of the circularly bent-around upper edge of container 11 increasing the diameter of the circular rim 12 (see figure 1) and destabilizing the snap-on connection of the lid.

Accordingly, Applicant respectfully submits that new claim 24 is patentable over the cited prior art.

New Claim 25

This claim is a combination of the features of original claims 1, 3, 4 14-16 and 21. Rib 16 and snap edge 6 are arranged below circumferential edge 23 (Fig. 2, 4; p. 15, 1. 29, p. 16, 1. 18 of the specification).

This arrangement enables arrangement of the snap edge or reinforcing rib at height of the portion of the sealing web protruding downward from the adjacent portion of the projection and having the greatest sealing effect (see claim 6), leading to increase leak-proofness.

New Claim 26

This claim is a combination of the features of original claims 1, 3, 14-16, 21 and p. 10, 1. 36ff, p. 12, 1. 24ff and figure 2.

This claim is directed to a container having a snap edge and a reinforcing rib, the snap edge being arranged at the collar region and the reinforcing rib is integrally molded on the collar or between the snap edge and the upper edge of the container.

Landgraf discloses a plastic container having a collar with a snap edge and a projection having an area adjacent to the sealing web being smaller than the total vertical extension of the projection. None of the further prior art documents discloses a collar being provided with a reinforcing rib or disclosing a container having a reinforcing rib arranged between the snap edge and the upper edge of the container.

The inventor has found that the arrangement of the snap edge at the collar region and the arrangement of a reinforcing rib at the collar or between the snap edge and the upper edge of a container leads to a rather stiff container having improved leak-proofness, while the arrangement of the snap edge or the reinforcing rib at level or roughly level with the sealing edge leads to high leak-proofness.

Accordingly, Applicant respectfully submits that new claim 26 is patentable over the cited prior art.

Applicant submits that the invention is new and unobvious and not disclosed by the cited art. Accordingly, Applicant respectfully solicits the Examiner's early review and issuance of this application.

Respectfully submitted,

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"Version with Markings to Show Changes Made"

IN THE SPECIFICATION

Please amend the paragraph spanning pages 15 and 16 as follows:

The lid has a circumferential sealing web 20 on the inside relative to seal 11, which only tightly contacts the inside wall of the bucket along part of ~~the~~ its height, specifically in the region 20' of the bottom end of the web in this example, which is located roughly at the height of reinforcing ~~edge~~ rib 16 or the snap edge. ~~Rib~~ Web 20, which essentially projects vertically downward, is located at the height of an inwardly projecting shoulder 21 of the inside wall of the bucket and at a slight vertical distance from it. When slight vertical pressure is applied to the lid, rib 20 rests on indentation 21. Indentation 21 is delimited on the inside by a circumferential ridge 22, in place of which individual projections can also be provided, where ridge 22 extends above the bottom edge of ~~rib~~ web 20 and prevents the inward movement of ~~rib~~ web 20. ~~Rib~~ Web 20 can also be received in a press fit between ridge 22 and the adjacent, outer wall area of the bucket. ~~Rib~~ Web 20 is angled slightly outward, so that the sealing region of ~~rib~~ web 20, i.e. the bottom edge of the same (see Fig. 2) would come to rest radially outside the inside wall of the bucket when the lid is removed. In this case, the thickness of the bottom edge

roughly corresponds to the rib thickness, preferably more than 1/4 of the same, where it is slightly tapered here. As a result, radially pretensioned contact with the inside wall of the container is consistently achieved when the lid is on.

Please amend the first full paragraph on page 16 as follows:

A circumferential, radially inside edge 23, which slopes slightly down towards the inside or is essentially horizontal, is integrally moulded on ~~rib~~ web 20 above the sealing region 20' and below the ~~sealing region~~seal 11 in the region of the top edge of the container (cf. also Fig. 4), on which inwardly facing bevels 24 or, in areas with a wider edge, essentially vertical wall areas 25 are integrally moulded in segments, which transition into the horizontal lid area 26 at the same height. In this context, wall areas 25, as part of the projections, are integrally moulded on circumferential edge 23 in the circumferential direction of the lid in alternating fashion with bevels 24. Vertically extending side walls 29a of the projections integrally moulded on ~~rib~~ web 20 are thus avoided. In addition, material stresses acting on the two sealing regions are minimised by the vertical spacing of ~~edge~~ web 20 or when the top side of the projections does not have an edge. Area 26 is located below snap edge 6, where its outside diameter is dimensioned, as shown, such that it is possible to stack buckets. This

results in projections with a triangular cross-section that are integrally moulded on a trapezoidal groove open towards the bottom.

Please amend the first paragraph on page 17 as follows:

The essentially vertical leg of U-shaped top edge 4 transitions towards the outside into a bevel 15, thus forming a stepped shoulder. Snap edge 6 is integrally moulded below this shoulder, where a radial, circumferential reinforcing ~~edge~~ rib 16 is integrally moulded between the snap edge and the shoulder, at the height of the shoulder here, which, in this example, is flush towards the outside with snap edge 6 and has a corresponding width, i.e. vertical extension. The bottom edge of reinforcing ~~edge~~ rib 16 is designed to correspond to that of snap edge 6, so that snap edge 7 of the lid can also engage the groove located between edges 6 and 16, to which end the top edge of snap edge 6 also slopes down towards the outside. When completely snapped on, the edge of the lid thus rests against the outer edge of snap edge 6 and/or reinforcing ~~edge~~ rib 16, so that, together with sealing web 20, force is applied to both sides of the top region of the container. The vertically symmetrical application of force, in particular, results in very good leak-proofness. This is also enhanced by the U-shaped design of the top region of the container, which can be laterally compressed by a

tension force. A slight gap can be provided between bevel 15 and sliding bevel 17 of the lid located above it.

Please amend the third full paragraph on page 18 as follows:

As shown in Fig. 4, circumferential edge 23 of the lid, which is located on the inside of bucket wall 3, is provided with segments 28, 29 of different radial width, this resulting in an effective reinforcing profile, in order to absorb forces on the sealing region of ~~rib~~ web 20 or seal 11. According to the example, the circumferential extension of segments 28, 29 is a multiple of their width. Bevels 24 and vertical wall areas 25 end at the same distance from the main axis of the bucket, where areas 30 delimiting bevel 24 on the side are inclined towards the periphery of the lid. Areas 25, 29 and 29a thus border projections 25a.

Please amend the second full paragraph on page 19 as follows:

Figure 6 shows another practical example, in which projections 29 with essentially vertical reinforcing ribs 46 are provided on provided on the inside of the lid, which are connected to the outer, essentially vertical and essentially horizontal areas of projecting segments 29 and end in front of circumferential sealing ~~edge~~ web 20. The distance to sealing ~~edge~~ web 20 can also be relatively small, e.g. in the region

of the wall thickness of rib 46 or less. The reinforcing ribs can also extend up to sealing ~~edge~~ web 20, where they preferably do not, however, contact the sealing edge in linear fashion, in order to avoid leaks due to shrinkage, particularly not at the height of the sealing contact area of the sealing rib on the inside wall of the container. Reinforcing ribs 45 of such design can also be correspondingly provided on an inside, circumferential edge of the lid, which is not divided into projecting and receding areas. Ribs 46 are flush with the bottom edge of the lid region. They can also support lid area 26 if necessary.

Please amend the last paragraph on page 20 as follows:

As shown in the stacking diagram in Fig. 7, reinforcing ribs 46 can simultaneously serve the purpose of providing support on the lid below and rest in linear or punctiform fashion on the top side of inside projections 29 or the circumferential edges. In addition, the lid is supported on the lid below by web 47, projecting downwards below the snap edge, resting on circumferential shoulder 48 surrounding sliding bevel 17. In this context, sealing ~~rib~~ web 20 is at a distance from the adjacent lid and can, if necessary, also rest on it.

Please amend the "List of reference numbers" on page 22 as follows:

1 Bucket

2 Lid

3 Outer wall

4 Top edge

5 Collar

6, 7 Snap edge

8 Outer flank

9 Rib

10 Flank

11 Seal

11a Sealing rib

12 Vertical section

13 Bevel

14 Cavity

15 Bevel

16 Reinforcing ~~edge~~rib

17 Sliding bevel

18 Shoulder

19 Tamper-proof seal

20 Sealing web

21 Indentation

22 Ridge

23, 24 Bevel

25 Wall

25a Projection

IN THE CLAIMS

Claims 1 and 14-16 have been cancelled.

Please amend claims 2, 3, 6, 7-9, 11 17-18 and 20-21 as follows:

2. (Twice Amended) The container according to claim ~~1~~22, wherein areas of the projection adjacent to the sealing web are provided which are formed walls extending perpendicularly to the sealing web, the vertical extension of the walls adjacent to the sealing web being smaller than the total vertical extension.

3. (Twice Amended) The container according to claim ~~1~~22, wherein the projection is spaced radially apart from the sealing web located on the inside of the container.

6. (Twice Amended) The container according to claim ~~1~~22, wherein an area of the projection integrally moulded on the sealing web is spaced apart from an area of the sealing web that provides the greatest sealing effect.

7. (Twice Amended) The container according to claim ~~1~~22, wherein the sealing region of the sealing web is ~~in the region~~along at least a portion of the vertical height of the projections~~.~~

8. (Twice Amended) The container according to claim ~~1~~22, wherein the at least one projection is integrally moulded on the lid at a height of a top side of an area extending radially inwards from the sealing web and sloping down towards the inside of the container.

9. (Twice Amended) The container according to claim ~~1~~22, wherein an additional circumferential sealing region is provided wherein areas of the projection of the lid integrally moulded on the sealing web and extending radially inward are spaced vertically apart from the additional sealing region.

11. (Twice Amended) The container according to claim ~~1~~22, wherein an indentation is formed in the inside wall of the container below the sealing web, on which a lower, free end of the sealing web can rest.

17. (Twice Amended) The container according to claim ~~1~~22, wherein a further sealing region between a top edge of the container and the lid is provided with a circumferential seal made of a material of greater elasticity than that of the container and the lid.

18. (Twice Amended) The container according to Claim ~~1~~22, wherein the container has a main axis and that an area which slopes down towards the inside wall of the container and is at an acute angle to the main axis of the container is provided radially inward on the top edge of a container.

20. (Twice Amended) The container according to Claim ~~1~~22, wherein at least one contact surface for lateral contact with the lid, which projects radially outward, is integrally moulded on the area adjacent to a top edge of the container on the outside.

21. (Twice Amended) The container according to Claim ~~1~~22, wherein the outside of the upper region of the container has a downward-facing circumferential collar region, which is joined in the region of a top edge of the container.

New claims 22-26 have been added.

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Drawing
S. Zimmerman

FIG.2